

INVENTOR SEARCH

=&gt; d his 177

(FILE 'CASREACT' ENTERED AT 15:51:07 ON 29 OCT 2007)  
L77 3 S L53 AND L71

FILE 'STNGUIDE' ENTERED AT 15:52:47 ON 29 OCT 2007

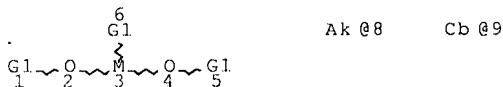
=&gt; d que 177

L49 14 SEA FILE=CASREACT ABB=ON PLU=ON MIYAKE N?/AU  
L50 415 SEA FILE=CASREACT ABB=ON PLU=ON WATANABE T?/AU  
L51 77 SEA FILE=CASREACT ABB=ON PLU=ON (ASAHI(W)KASEI?)/PA,C  
S,SO,CO  
L53 5 SEA FILE=CASREACT ABB=ON PLU=ON (L49 OR L50) AND L51  
  
L71 QUE ABB=ON PLU=ON PY<2003 OR PRY<2003 OR AY<2003 OR  
MY<2003 OR REVIEW/DT  
L77 3 SEA FILE=CASREACT ABB=ON PLU=ON L53 AND L71

=&gt; d his 175

(FILE 'HCAPLUS' ENTERED AT 15:39:19 ON 29 OCT 2007)  
L75 2 S L72 AND L73

=&gt; d que 175

L2 19 SEA FILE=REGISTRY ABB=ON PLU=ON (10301-02-7/BI OR  
104-76-7/BI OR 111-27-3/BI OR 123-51-3/BI OR 124-38-9/B  
I OR 14858-73-2/BI OR 149746-25-8/BI OR 181116-34-7/BI  
OR 2050-95-5/BI OR 3644-24-4/BI OR 62774-20-3/BI OR  
64401-37-2/BI OR 660402-27-7/BI OR 660402-29-9/BI OR  
660402-31-3/BI OR 71-36-3/BI OR 7523-15-1/BI OR  
78-83-1/BI OR 818-08-6/BI)  
L3 3 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND ESTER?/CNS  
L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON 124-38-9/RN  
L12 STR

VAR G1=8/9

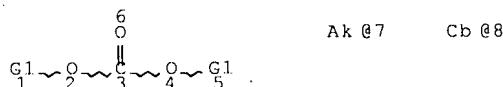
NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED  
ECOUNT IS M1-X14 C AT 8  
ECOUNT IS M5-X20 C AT 9

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 8

STEREO ATTRIBUTES: NONE

L17 204470 SEA FILE=REGISTRY ABB=ON PLU=ON (M(L)C(L)H(L)O)/ELS(L  
)4/ELC.SUB  
L19 3362 SEA FILE=REGISTRY SUB=L17 SSS FUL L12  
L20 3 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND L19  
L23 STR

L79 ANSWER 11 OF 23 HCPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1999:97437 HCPLUS Full-text  
 DOCUMENT NUMBER: 130:168016  
 TITLE: Preparation of carbonic acid esters  
 INVENTOR(S): Itakura, Toshiyasu; Sako, Takeshi  
 PATENT ASSIGNEE(S): Agency of Industrial Sciences and Technology,  
 Japan; National Institute of Advanced  
 Industrial Science & Technology  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11035521	A	19990209	JP 1997-192201	1997 0717
<--				
JP 3702333	B2	20051005	JP 1997-192201	1997 0717
<--				

OTHER SOURCE(S): CASREACT 130:168016; MARPAT 130:168016

ED Entered STN: 12 Feb 1999

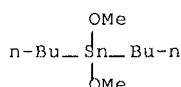
AB Title compds. are prepared by reaction of CO<sub>2</sub> with ortho esters in the presence of metal alkoxides and halo compds. (chosen from quaternary phosphonium salts or alkali metal salts). Me orthoacetate was treated with CO<sub>2</sub> in the presence of Bu<sub>2</sub>Sn(OMe)<sub>2</sub> and Bu<sub>4</sub>NI under  $\leq 250$  kg/cm<sup>2</sup> at 150° for 24 h to give 11.22% di-Me carbonate.

IT 1067-55-6, Dibutyltin dimethoxide

RL: CAT (Catalyst use); USES (Uses)  
 (preparation of carbonic acid esters by carbonylation of CO<sub>2</sub> with ortho esters in the presence of metal alkoxide and halo compound catalysts.)

RN 1067-55-6 HCPLUS

CN Stannane, dibutylidimethoxy~ (CA INDEX NAME)

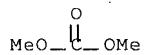


IT 616-38-6P, Dimethyl carbonate

RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
 PREP (Preparation)  
 (preparation of carbonic acid esters by carbonylation of CO<sub>2</sub> with ortho esters in the presence of metal alkoxide and halo compound catalysts.)

RN 616-38-6 HCPLUS

CN Carbonic acid, dimethyl ester (CA INDEX NAME)



IT 124-38-9, Carbon dioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

RN 124-38-9 HCAPLUS

CN Carbon dioxide (CA INDEX NAME)

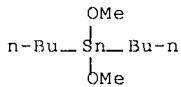
O—C—O

IC ICM C07C068-04  
ICS B01J031-02; C07C069-96; C07B061-00  
CC 23-17 (Aliphatic Compounds)  
ST ortho ester carbonylation **carbon dioxide**;  
metal alkoxide catalyst carbonylation ortho ester; halo catalyst  
carbonylation ortho ester; carbonic acid ester **prep**  
IT Esters, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(ortho acid; preparation of carbonic acid esters by  
carbonylation of CO<sub>2</sub> with ortho esters in the  
presence of metal alkoxide and halo compound catalysts.)  
IT Carbonylation catalysts  
(preparation of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)  
IT Alkali metal compounds  
Crown ethers  
Halogen compounds  
Metal alkoxides  
Phosphonium compounds  
Quaternary ammonium compounds, uses  
RL: CAT (Catalyst use); USES (Uses)  
(preparation of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)  
IT Carbonate esters  
RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
PREP (Preparation)  
(preparation of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)  
IT 109-88-6, Magnesium dimethoxide 311-28-4, Tetrabutylammonium  
iodide 1067-52-3, Tributyltin methoxide 1067-55-6,  
Dibutyltin dimethoxide 3115-66-0, Tetrabutylphosphonium iodide  
7440-67-7, Zirconium, uses 7681-11-0, Potassium iodide, uses  
16069-36-6, Cis-dicyclohexano-18-crown-6 93644-58-7  
RL: CAT (Catalyst use); USES (Uses)  
(preparation of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)  
IT 616-38-6P, Dimethyl carbonate  
RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
PREP (Preparation)  
(preparation of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)  
IT 124-38-9, Carbon dioxide, reactions  
149-73-5, Methyl orthoformate 1445-45-0, Methyl orthoacetate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

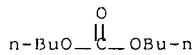
L79 ANSWER 15 OF 23 HCPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1995:499831 HCPLUS Full-text  
 DOCUMENT NUMBER: 122:290332  
 TITLE: Preparation of carbonic acid esters  
 from carbon dioxide and  
 alcohols  
 INVENTOR(S): Ko, Ko; Ogata, Fujimaro  
 PATENT ASSIGNEE(S): Showa Denko Kk, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07033715	A	19950203	JP 1993-182851	
				1993
				0723
<--				
PRIORITY APPLN. INFO.:	JP 1993-182851			
				1993
				0723
<--				

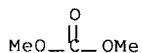
OTHER SOURCE(S): CASREACT 122:290332; MARPAT 122:290332  
 ED Entered STN: 20 Apr 1995  
 AB Carbonic acid esters are prepared by reaction of alcs. with CO<sub>2</sub> using metal compound catalysts in the presence of dehydration agents to remove H<sub>2</sub>O. A mixture of 10 mL MeOH, Bu<sub>2</sub>Sn(OMe)<sub>2</sub>, and HC(OMe)<sub>3</sub> was treated with CO<sub>2</sub> at 150° under apprx. 100 kg/cm<sup>2</sup> for 24 h to give 5.9 g Me<sub>2</sub>CO<sub>3</sub>.  
 IT 1067-55-6, Dibutyldimethoxytin  
 RL: CAT (Catalyst use); USES (Uses)  
 (preparation of carbonic acid esters from CO<sub>2</sub>  
 and alcs. with metal catalysts and dehydration agents)  
 RN 1067-55-6 HCPLUS  
 CN Stannane, dibutyldimethoxy- (CA INDEX NAME)



IT 542-52-9P, Dibutyl carbonate 616-38-6P, Dimethyl carbonate  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
 PREP (Preparation)  
 (preparation of carbonic acid esters from CO<sub>2</sub>  
 and alcs. with metal catalysts and dehydration agents)  
 RN 542-52-9 HCPLUS  
 CN Carbonic acid, dibutyl ester (CA INDEX NAME)



RN 616-38-6 HCPLUS  
 CN Carbonic acid, dimethyl ester (CA INDEX NAME)



IT 124-38-9, Carbon dioxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of carbonic acid esters from CO<sub>2</sub>  
and alcs. with metal catalysts and dehydration agents)  
RN 124-38-9 HCAPLUS  
CN Carbon dioxide (CA INDEX NAME)

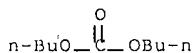


IC ICM C07C069-96  
ICS B01J031-02; C07C068-04  
ICA C07B061-00  
CC 23-8 (Aliphatic Compounds)  
Section cross-reference(s): 45  
ST carbonate ester prep; carbon dioxide  
reaction alc dehydration  
IT Catalysts and Catalysis  
Drying agents  
(preparation of carbonic acid esters from CO<sub>2</sub>  
and alcs. with metal catalysts and dehydration agents)  
IT Zeolites, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(preparation of carbonic acid esters from CO<sub>2</sub>  
and alcs. with metal catalysts and dehydration agents)  
IT Alcohols, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of carbonic acid esters from CO<sub>2</sub>  
and alcs. with metal catalysts and dehydration agents)  
IT 1067-55-6, Dibutyldimethoxytin  
RL: CAT (Catalyst use); USES (Uses)  
(preparation of carbonic acid esters from CO<sub>2</sub>  
and alcs. with metal catalysts and dehydration agents)  
IT 542-52-9P, Dibutyl carbonate 616-38-6P, Dimethyl  
carbonate  
RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
PREP (Preparation)  
(preparation of carbonic acid esters from CO<sub>2</sub>  
and alcs. with metal catalysts and dehydration agents)  
IT 75-87-6, Chloral 149-73-5, Trimethyl orthoformate 538-75-0,  
DCC 1445-45-0, Trimethyl orthoacetate 5009-27-8,  
Cyclopropanone  
RL: NUU (Other use, unclassified); USES (Uses)  
(preparation of carbonic acid esters from CO<sub>2</sub>  
and alcs. with metal catalysts and dehydration agents)  
IT 67-56-1, Methanol, reactions 71-36-3, Butanol, reactions  
124-38-9, Carbon dioxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of carbonic acid esters from CO<sub>2</sub>  
and alcs. with metal catalysts and dehydration agents)

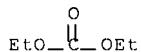
L79 ANSWER 22 OF 23 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1979:168087 HCAPLUS Full-text  
 DOCUMENT NUMBER: 90:168087  
 TITLE: Dialkyl carbonates from alkanols and  
**carbon dioxide**  
 INVENTOR(S): Yamazaki, Noboru; Nakahama, Seiichi; Endo,  
 Kazuo  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Co., Ltd.,  
 Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 54003012	A	19790111	JP 1977-68310	1977 0609
<--				
JP 56040707	B	19810922	JP 1977-68310	A 1977 0609
<--				

ED Entered STN: 12 May 1984  
 AB (RO)2CO (R = Me, Et, Pr, Bu) were **prepared** by heating ROH with CO<sub>2</sub> in the presence of Bu<sub>2</sub>Sn(OMe)<sub>2</sub> (I), Bu<sub>2</sub>Sn(OEt)<sub>2</sub>, Sn(OMe)<sub>4</sub>, Sn(OBu)<sub>4</sub>, Ti(OEt)<sub>4</sub>, or Ti(OBu)<sub>4</sub>. Thus, 0.5 g I was autoclaved with 5 mL EtOH and 5 kg/cm<sup>2</sup> CO<sub>2</sub> at 100° for 24 h to give 220 mol% (EtO)2CO and 95 mol% MeOCO<sub>2</sub>Et based on I.  
 IT 542-52-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by reaction butanol with **carbon dioxide**)  
 RN 542-52-9 HCAPLUS  
 CN Carbonic acid, dibutyl ester (CA INDEX NAME)

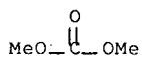


IT 105-58-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by reaction ethanol with **carbon dioxide**)  
 RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (CA INDEX NAME)



IT 616-38-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by reaction of methanol with  
**carbon dioxide**)  
 RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (CA INDEX NAME)

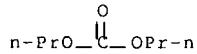


IT 623-96-1P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction of propanol with  
carbon dioxide)

RN 623-96-1 HCPLUS

CN Carbonic acid, dipropyl ester (CA INDEX NAME)

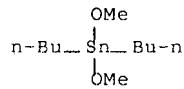


IT 1067-55-6

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of carbon dioxide with alkanols  
in presence of)

RN 1067-55-6 HCPLUS

CN Stannane, dibutyldimethoxy- (CA INDEX NAME)

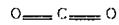


IT 124-38-9, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with alkanols, dialkyl carbonates from)

RN 124-38-9 HCPLUS

CN Carbon dioxide (CA INDEX NAME)



IC C07C069-96

CC 23-17 (Aliphatic Compounds)

ST alkyl carbonate; carbonate dialkyl; alkanol esterification  
carbon dioxide

IT Esterification

(of alkanols with carbon dioxide)

IT 542-52-9P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction butanol with carbon  
dioxide)

IT 105-58-8P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction ethanol with carbon  
dioxide)

IT 616-38-6P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction of methanol with  
carbon dioxide)

IT 623-96-1P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction of propanol with  
carbon dioxide)

IT 1067-55-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of carbon dioxide with alkanols  
in presence of)

IT 124-38-9, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with alkanols, dialkyl carbonates from)

IT 71-36-3, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with carbon dioxide, di-Bu  
carbonate from)

IT 64-17-5, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with carbon dioxide, di-Et  
carbonate from)

IT 67-56-1, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with carbon dioxide, di-Me  
carbonate from)

IT 71-23-8, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with carbon dioxide, di-Pr  
carbonate from)